

REMARKS

This communication is in response to the Office Action mailed December 30, 2003. In the Office Action, claims 1-11 and 29-39 were pending.

The Office Action reports that new corrected drawings are required in the application. With this communication, applicants have submitted corrected drawings.

Claims 1-5, 7-8, 29-33 and 35-36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sommerfeld et al. (U.S. Pat. No. 5,969,268) in view of Gruber (U.S. Pat. No. 3,033,031) and further in view of Larsen et al. (U.S. Pat. No. 6,324,919). Claims 1 and 29 are independent. Claim 1 recites a load cell having a first sensor support assembly and a second sensor support assembly. Each sensor support assembly includes a rigid central hub having an end plate and a support element extending transversely from the end plate as well as a rigid annular ring concentric with the central hub. A mount is joined to the end plate of the first sensor support assembly and is spaced apart from and extending in the same direction as the support element of the first sensor support assembly. A first plurality of sensing devices are operably coupled between the support element of the first sensor support assembly and the corresponding annular ring. A second plurality of sensing devices are operably coupled between the support element of the second sensor support assembly and the corresponding annular ring. Claim 29 recites similar features directed to a load cell body.

Applicants have amended claims 1 and 29 to include the words "or obliquely" after the word "transversely". Support for this amendment is found on page 5, line 5. This amendment clarifies that the present claims will cover support structures that are transverse from the end plate, including oblique and perpendicular embodiments. Applicants submit that the combination of Sommerfeld et al., Gruber and Larsen et al. fail to teach or suggest the features recited in independent claims 1 and 29.

Sommerfeld et al. describe a multi-axis load cell having a rigid central hub, a rigid annular ring and a plurality of radial members extending radially and joining the central hub to the annular ring. A slip ring assembly can be attached to the load cell body. Gruber describes a pad with means for measuring thrust loads. Load cells are located on opposite sides of a collar for measuring thrust loads. Larsen et al. describe a load transducer for measuring forces and/or moments on a rotatable member.

Applicants respectfully request clarification of the rejection reported in the Office Action. In particular, on page 2, the Office Action states, "Sommerfeld et al. teaches...a rigid central hub 14 having an end plate and a support element extending transversely from the end plate." However, the Office Action on page 3 states that Sommerfeld et al., "does not teach the rigid central hub having an end plate and a support element extending transversely from the end plate." Applicants submit that these two statements are inconsistent with each other. Furthermore, the Office Action provides, "Larsen teaches a load transducer that comprises an annular ring 30 concentric to it having an end plate, and a support element 130 extending transversely from the end plate." It is submitted that element 130 of Larsen is merely a mounting flange extending from ring 30. It is unclear how flange 130 is used in rejecting the pending claims since it does not appear that flange 130 of Larsen et al. is a sensing device coupled between a support assembly and an annular ring or sensing structure as recited by independent claim 1 or a serving structure as recited in claim 29. Moreover, flange 130 of Larsen et al. is not coupled to the outer ring.

In addition, the Office Action reports modifying the load cell of Sommerfeld et al. with the device of Gruber to duplicate the number of measurements would be obvious because the combination would make measurements more accurate and reliable. Applicants note that an obviousness combination must be based on objective evidence of record. See In Re Lee, 61 USPQ 2d 1430

(Fed. Cir. 2002). Sommerfeld et al. describe a compact load cell capable of use on a moving automobile by coupling the cell to a slip ring assembly. Duplicating the structure of the load cell would destroy the compact nature of the device as well as form a complicated structure for coupling to a slip ring assembly. Additionally, there is simply no objective evidence recited that the combination would provide more reliable and accurate measurements. Thus, applicants submit that a combination of Sommerfeld et al. and Gruber would not lead to the claimed invention.

The Office Action further reports, "It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the load cell of Sommerfeld et al. as modified by Larsen and further utilizing the teachings of the load transducer of Larsen by providing a support element extending transversely from the end plate of his annular ring to make a device more stable and facilitate the attachment of said transducer therefore making said device versatile." Applicants simply find no objective evidence to support this combination or that a more stable, versatile device would result. In particular, applicants are unaware how a flange such as element 130 of Larsen et al. would make the compact load cell of Sommerfeld et al. more stable and furthermore how the device would be more versatile. Applicants note that the flange 130 of Larsen et al. could make it more difficult to attach a slip ring assembly to the load cell of Sommerfeld et al. and there is no objective evidence that the mounting plate 87 is ineffective, thus leading to a less "versatile" load cell. As a result, applicants submit that the combination of Sommerfeld et al. and Larsen et al. would not lead to recited elements of the claimed invention.

In contrast to the prior art, the present invention provides a load cell that can locate sensing elements further away from a heat source generated during use of the load cell. As recited in the claims, a support element extends transversely from an end plate in first and second support assemblies such

that sensors are located further away from the end plate to minimize the conduction of heat from the end plate to the sensors. As recited in dependent claims, insulating elements and/or cooling elements can further be provided. When viewing the combination of Sommerfeld et al., Gruber and Larsen et al., applicants simply fail to see how various elements of the prior art references either teach or suggest the elements recited in the pending claims. In particular, an end plate and a support element extending transversely from the end plate, a mount joined to the end plate and spaced apart from and extending in the same direction as the support element of the first sensor assembly and end plates of the first and second sensor support assembly being joined together are simply not provided in the combination reported in the Office Action. For these reasons, independent claims 1 and 29 and the dependent claims therefrom are believed to be allowable.

A petition for an extension of time is hereby requested. A check in the amount of \$110.00 is included herewith for the extension fee.

In view of the foregoing, applicants respectfully reconsideration and allowance of the pending claims. Favorable action is solicited.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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